

CLAIMS

1. A method of treating the surface of substrates, characterized in that the substrate is brought into contact with a solution of a polymer which exhibits UCST properties and which is caused to be deposited onto the surface of the substrate as a layer by decreasing the temperature of the polymer solution.
2. A method as defined in claim 1, characterized in that the polymer is selected from the group comprising polystyrenes, polyvinyl alcohols, polyvinyl pyrazoles, polyethylene oxides, polyacrylic acids, and derivatives thereof.
3. A method as defined in claim 1 or claim 2, characterized in that the solution contains an organic solvent.
4. A method as defined in any one of claims 1 to 3, characterized in that the temperature of the solution when contacted with the surface of the substrate is greater than the UCST of the polymer in the solvent, and that the temperature of the solution is then decreased to a value within the UCST range or lower.
5. A method as defined in any one of claims 1 to 3, characterized in that the temperature to which the solution is cooled ranges from $ca\ T = UCST + 5\ ^\circ C$ to $T = UCST - 30\ ^\circ C$.
6. A method as defined in claim 5, characterized in that said temperature range is from $T = UCST$ to $T = UCST - 10\ ^\circ C$.
7. A method as defined in any one of claims 1 to 6, characterized in that the temperature is kept at the low level until substantially complete deposition of the polymer onto the surface of the substrate has been achieved.
8. A method as defined in any one of claims 1 to 7, characterized in that following deposition of the polymer, the coated surface of the substrate is washed with a solvent for the polymer at a temperature equal to approximately the

UCST of the polymer in the solvent minus 10 °C or lower.

9. A method as defined in any one of claims 1 to 8, characterized in that following deposition of the polymer, the substrate and the solution are kept at a temperature above the UCST for a short period, after which the substrate and solution are parted from each other.
10. A method as defined in claim 9, characterized in that the temperature reached when increasing the temperature is not higher than 5 °C above the UCST.
11. A method as defined in any one of claims 1 to 10, characterized in that during or following deposition of the polymer onto the surface of the substrate the polymer is immobilized by means of active groups or a chemical reaction.
12. A method as defined in claim 11, characterized in that the surface of the substrate is washed following immobilization of the polymer.
13. A method as defined in claim 11 or claim 12, characterized in that said immobilization is effected by depositing a polymer modified with olefinic groups (double bonds), which is then free-radically immobilized.
14. A method as defined in any one of claims 1 to 13, characterized in that prior to deposition of the polymer onto the surface of the substrate said polymer is modified to selectively influence the wetting angle of the coated surface of the substrate.
15. A method as defined in claim 14, characterized in that said modification of the polymer is effected by means of non-polar alkyl groups or with polar groups, particularly hydroxyl or amino groups, or ionic groups, particularly carboxylic acid groups or sulfo groups.
16. A method as defined in claim 15, characterized in that following deposition of the polymer onto the surface of the substrate, the polymer is modified and

crosslinked.

17. A method as defined in any one of claims 1 to 16, characterized in that the substrate is a particulate substrate and that the polymer has a molar mass of from 1,000 to 50,000 g/mol.
18. A method as defined in any one of claims 1 to 16, characterized in that the substrate is a flat substrate and that the polymer has a molar mass of from 1,000 to 500,000 g/mol.
19. A method as defined in claim 17, characterized in that the particulate substrate is selected from the group comprising pigments, fillers, fibers, nano particles, and particles of colloidal or micellar systems.
20. A method as defined in any one of claims 1 to 19, characterized in that the surface of the substrate is coated with a nano layer of a polymer.
21. A method as defined in any one of the preceding claims, characterized in that the UCST polymers are selected such that their UCST is above the operating temperature of the substrate, preferably at least 10 °C, and more preferably at least 15 °C, above room temperature.
22. A substrate having a polymer-coated surface, produced by a method as defined in any one of claims 1 to 21.
23. A substrate as defined in claim 22, characterized in that the coating is a nano layer.
24. A substrate as defined in claim 22 or claim 23, characterized in that the substrate is a metallic substrate.
25. A substrate as defined in claim 24, characterized in that the substrate is made of steel, galvanized steel, aluminum, or an aluminum alloy.

26. A substrate as defined in any one of claims 22 to 25, characterized in that the substrate is a particulate substrate, selected from the group comprising pigments, fillers, fibers, or lamellar particles, nano particles, and particles of colloidal or micellar systems.